

ABSTRACT

ADSORPTION CAPACITY OF NATURAL ZEOLITE CLIPNOTILOLIT-Ca ACTIVATED WITH HEATING ON Cu(II), Cd(II) and Pb(II)

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The research is about the benefits of natural zeolite as the adsorbent activated ion Cu(II), Cd(II) and Pb(II) has been performed. The parameters used are the effect of variations in activation, the size of adsorbent particle, adsorbent mass, contact time, the volume of metal solute, the initial concentration of the solute, and pH of the solute. These parameters were studied to determine the optimum conditions in the adsorption process. The optimum conditions absorption of ion Cu(II), Cd(II) and Pb(II) for the activation process at a temperature of 105°C, a particle size adsorbent 125 µm, 0.1 gram of adsorbent mass, contact time of 10 minutes for Cu(II) and Cd(II) while the Pb(II) 30 min, 12.5 mL solution volume metal, the metal solution concentration of 40 mg/L and a pH of 7, the absorption capacity in optimum condition for Cu(II) of 4.74 mg/g, Cd(II) 4.04 mg/g and Pb(II) 4.98 mg/g. Adsorbent characterization by XRD showed that the type of zeolite used is Clipnotilolit-Ca. FTIR characterization of functional groups obtained T-O (where T is Si or Al) on the value of the wave 1400-800 cm⁻¹. SEM characterization of adsorbent before adsorption shows that the morphology of zeolite clipnotilolit-Ca has a rough surface morphology and after adsorption zeolite Clipnotilolit-Ca surface becomes smoother.

Keywords: adsorbent, adsorption, zeolite, heavy metal